

WHAT IS CLAIMED IS:

1. A seal device for a tubular member provided with a single cylindrical seal tube to be inserted into a passage such as a tubular member, in which the seal tube is expanded toward an outer periphery by injecting a fluid into the seal tube, for use in sealing an inside of the passage such as a tubular member, the seal device for a tubular member comprising:

the seal tube having openings at a fore end and a rear end thereof;

first and second base members to be inserted to the fore end and the rear end of the seal tube, so as to tightly seal an inside of the seal tube;

a fluid injection passage disposed in such a manner as to communicate with the inside of the seal tube through the second base member;

a discharge pipe inserted through the seal tube and communicating with an outside of the seal tube through the first and second base members; and

a switch valve for opening and closing the discharge pipe.

2. A seal device for a tubular member according to claim 1, wherein the seal tube includes a cylindrical rubber sleeve layer, and a cylindrical rubber cover layer laminated on an outer periphery of the rubber sleeve layer and covering the outer periphery of the rubber sleeve layer.

3. A seal device for a tubular member according to claim 1, wherein the first base member has a guide, the guide being formed into a tapered shape projecting from a tip of the seal tube and gradually increasing in outer diameter from a tip portion of the guide toward a base end portion of the guide at a seal tube side thereof and being configured so as to be replaceable, whereby the guide can be replaced with another guide having a maximum outer diameter according

to an inner diameter of the fluid passage such as a tubular member.

4. A seal device for a tubular member according to claim 1, further including a pulling member detachably connected to the second base member and extending outside of the fluid passage in a state in which the seal tube is inserted into the fluid passage such as a tubular member, wherein the seal tube can be pulled out from the fluid passage such as a tubular member with the application of pulling force to the pulling member.

5. A seal device for a tubular member according to claim 1, wherein the fluid to be injected into the seal tube is gaseous nitrogen.

6. A seal device for a tubular member provided with a plurality of cylindrical seal tubes to be inserted into a passage such as a tubular member, in which the seal tubes are expanded toward an outer periphery by injecting a fluid into the seal tubes, for use in sealing an inside of the passage such as a tubular member, the seal device for a tubular member comprising:

the plurality of seal tubes, which can be elastically expanded toward the outer periphery, having openings at fore ends and rear ends thereof;

at least one connecting base member, by which a fore end of one of the seal tubes is connected to a rear end of another of the seal tubes, so as to configure a connected-tube body;

at least one communication path formed at the at least one connecting base member and allowing the plurality of seal tubes constituting the connected-tube body to communicate with each other;

first and second base members inserted to a fore end and a rear end of the connected-tube body, so as to tightly seal an inside of the connected-tube body;
and

a fluid injection passage disposed in such a manner as to communicate with insides of the plurality of seal tubes constituting the connected-tube body, through the second base member.

7. A seal device for a tubular member according to claim 6, including:

a discharge pipe inserted through the connected-tube body and communicating with an outside of the connected-tube body through the first and second base members; and

a switch valve for opening and closing the discharge pipe.

8. A seal device for a tubular member according to claim 6, wherein the plurality of seal tube includes a cylindrical rubber sleeve layer, and a cylindrical rubber cover layer laminated on an outer periphery of the rubber sleeve layer and covering the outer periphery of the rubber sleeve layer.

9. A seal device for a tubular member according to claim 6, wherein the first base member has a guide, the guide being formed into a tapered shape projecting from a tip of one of the seal tubes and gradually increasing in outer diameter from a tip portion of the guide toward a base end portion of the guide at a seal tube side thereof and being configured so as to be replaceable, whereby the guide can be replaced with another guide having a maximum outer diameter according to an inner diameter of the fluid passage such as a tubular member.

10. A seal device for a tubular member according to claim 6, further including a pulling member detachably connected to the second base member and extending outside of the fluid passage in a state in which the plurality of seal tubes are inserted into the fluid passage such as a tubular member, wherein the seal tube can be pulled out from the fluid passage such as a tubular member with the application of pulling force to the pulling member.

11. A seal device for a tubular member according to claim 6, wherein the fluid to be injected into the seal tube is gaseous nitrogen.

12. A seal device for a tubular member provided with a plurality of cylindrical seal tubes to be inserted into a passage such as a tubular member, in which each of the seal tubes is expanded toward an outer periphery by injecting a fluid into each of the seal tubes, for use in sealing an inside of the passage such as a tubular member, the seal device for the tubular member comprising:

the plurality of seal tubes, which can be elastically expanded toward the outer periphery, having openings at fore ends and rear ends thereof;

at least one connecting base member, by which a fore end of one of the seal tubes is connected to a rear end of another of the seal tubes, so as to configure a connected-tube body, the at least one connecting base member dividing the connected seal tubes such that each of the seal tubes is in a tightly sealed stated;

first and second base members inserted to a fore end and a rear end of the connected-tube body, so as to tightly seal seal tubes respectively constituting the fore end and the rear end of the connected-tube body; and

a plurality of fluid injection passages disposed in such a manner as to communicate independently with insides of the plurality of seal tubes constituting the connected-tube body, through the second base member and the at least one connecting base member.

13. A seal device for a tubular member according to claim 12, including:
a discharge pipe inserted through the connected-tube body and communicating with an outside of the connected-tube body through the first and second base members; and

a switch valve for opening and closing the discharge pipe.

14. A seal device for a tubular member according to claim 12, wherein the plurality of seal tubes includes a cylindrical rubber sleeve layer, and a cylindrical rubber cover layer laminated on an outer periphery of the rubber sleeve layer and covering the outer periphery of the rubber sleeve layer.

15. A seal device for a tubular member according to claim 12, wherein the first base member has a guide, the guide being formed into a tapered shape projecting from a tip of one of the seal tubes and gradually enlarging in outer diameter from a tip portion of the guide toward a base end portion of the guide at the seal tube side thereof and being configured so as to be replaceable, whereby the guide can be replaced with another guide having a maximum outer diameter according to an inner diameter of the fluid passage such as a tubular member.

16. A seal device for a tubular member according to claim 12, further including a pulling member detachably connected to the second base member and extending outside of the fluid passage in a state in which the plurality of seal tubes are inserted into the fluid passage such as a tubular member, wherein the seal tube can be pulled out from the fluid passage such as a tubular member with the application of pulling force to the pulling member.

17. A seal device for a tubular member according to claim 12, wherein the fluid to be injected into the seal tube is gaseous nitrogen.